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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/506,533	02/17/2000	Nicholas J. DeCristofaro	30-4519CIP1(4710)	7488

7590 10/10/2003

ATTN: PATEN SERVICES
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EXAMINER	
TAMAI, KARL I	

ART UNIT	PAPER NUMBER
2834	

DATE MAILED: 10/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/506,533	DECRISTOFARO ET AL.	
	Examiner	Art Unit	
	Tamai IE Karl	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 April 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 February 2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the top and bottom surfaces with a line normal to the axis of rotation must be shown or the features canceled from the claims. No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-36 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. The specification does not contain a full, clear, concise, and exact written description of each strip of the segment having a top and bottom surface with a line normal to either surface is substantially perpendicular to the axis of rotation.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 2, 3, 8, 19-22, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over German Patent 28 05 438('438) and Mischler et al.(Mischler) (4255684). '438 teaches a stator for a motor having a plurality of segments (one pole section and one backiron section) where the flux must cross an air gap between free ends of a tooth section 3 and a back iron section 2. Each segment is formed of a plurality of strips (the backiron sections stacked radially and the teeth section stacked axially, where the inner and outer surfaces of each section is a top and bottom surface of the strip. Each of the back iron sections having a top and bottom surface which has a line normal to the surface being perpendicular to the axis of rotation of the rotor. '438 teaches an stator core secured by being pressed into a housing or belted together (outer restraining member) and having self adhesive foil spacers(inner member). '438 teaches the tooth sections 3 being generally straight and the backiron sections 2 being generally bent. '438 does not teach the stator metal being an amorphous metal. Mischler teaches a stator for a motor with a plurality of segments formed from amorphous metal. Mischler teaches a rotor 22 supported within the stator. It is inherent that motor includes a means to support the rotor. It would have been obvious to a

person skilled in the art at the time of the invention to construct the stator of '438 with the metal being an amorphous metal because Mischler teaches that amorphous metal is inexpensive to produce and has low magnetic losses.

Regarding claims 19-21, the heat treatment, application of a magnetic field, and annealing are method of making limitation that is not germane to the patentability of the apparatus.

6. Claims 4, 5, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over '438 and Mischler, in further view of Thomas(US 2556013). '438 teaches the wedges 7 having a self adhesive to bond the teeth sections 3 and the back iron sections 2, where the adhesive does not include the first free end 5. The self adhesive inherently covering a substantial portion of the stator, such that the adhesive bonds to both the tooth and the backiron sections. '438 and Mischler teach every aspect of the invention except, a steel band peripherally around the stator. Thomas teaches a steel band 2 to secure a laminated stator core 3. It would have been obvious to a person skilled in the art at the time of the invention to construct the stator of '438 and Mischler with the steel band of Thomas because steel has a good tensile strength and because '438 teaches the stator core is secured in a frame.

7. Claims 6, 7, 24, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over '438, Mischler, and Thomas, in further view of Laing(US 3591819). '438, Mischler, and Thomas teach every aspect of the invention except the bonding

material being an epoxy resin and the inner restraining member being a bonding material and a metal band. Laing teaches a laminated stator having a plurality of sections, where the sections are held together by an synthetic resin and a rivet. The examiner takes official notice that an epoxy resin is well known synthetic resin in the motor art. It is inherent that the rivet is metal. It would have been obvious to a person skilled in the art at the time of the invention to construct the stator of '438, Mischler, and Thomas with the bonding material being an resin because Laing teaches that synthetic resins are a known binding material between stator lamination sections, with the resin being an epoxy resin because it is easily molded around the laminations, and with the rivet(banding) securing the tooth laminations together because Laing teaches that both a rivet and resin are used to secure the laminations together.

8. Claim 9 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over '438 and Mischler, in further view of Frischmann (US 4197146). '438 and Mischler teach every aspect of the invention except the specific atomic composition of the amorphous metal. Frischmann teaches the amorphous metal can made up of ONE OR MORE OF THE FOLLOWING: Fe, Ni, or Co from 70-90% which can be replace by Mo, W, Cr, and V from 70-90%, and C, B,P from 10-30% which can be replaced by Al, Sn, Sb, Ge, In and Be from 10-30%(which includes Si, Al, and Ge between 5-20%). Frischmann teaches that the elements within the group are interchangeable and that more than one could be used, which includes Y+Z replaced by In, Sn, or Sb. Frischmann teaches an impurity of C being 0-2% which includes the range of 0-1%. It

would have been obvious to a person skilled in the art at the time of the invention to construct the stator of '438 and Mischler with MYB composition with M replaced by up to 10% Mo, W, Cr, or V because Frischmann teaches that more than one M element may be used, with the (Y+Z) replaced by In, Sn, or Sb because Frischmann teaches that more than one Y and Z elements can be used, and because it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

9. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over '438, Mischler, and Frischmann, in further view of Datta et al.(Datta)(US 4.409,041). '438, Mischler, and Frischmann teach every aspect of the invention except the FeBSi formula. Datta teaches the FeBSi formula with the ranged and number claimed by the applicant. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the stator of '438, Mishcler, and Frischmann with the amorphous material as set forth in claims 10 and 11, because Datta suggests the disclosed range and because Datta suggests the disclosed range to enhance the magnetic properties.

10. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over '438, Mischler, and Frischmann, in further view of Vernin et al.(Vernin)(US 5922143). '438, Mischler, and Frischmann teach every aspect of the invention except nanocrystalline microstructure. Vernin teaches than a nanocrystalline structure is suitable for magnetic

cores. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the stator of '438, Mishcler, and Frischmann with the heat treated nanocrystal microstructure because Vernin teaches the nanostructure is good for magnetic cores.

11. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over '438, Mischler, Frischmann, and Vernin, in further view of Yoshizawa et al.(Yoshizawa)(US 4881989). '438, Mischler, Frischmann, and Vernin teach every aspect of the invention except composition of claims 13 and 14. Yoshizawa teaches the composition with similar atomic ranges. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the stator of '438, Mishcler, Frischmann, and Vernin with the amporphous composition of claims 13 and 14 because Yoshizawa teaches the components combine to make an amorphous material with excellent magnetic qualities, and in the specific range because a person of ordinary skill in the art would attempt to optimize the atomic composition to provide the best magnetic material.

12. Claims 15 –18, 26-33, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over '438 and Mischler. '438 and Mischler teach every aspect of the invention except the core loss and frequency range of the magnetic material. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the stator core of '438 and Mischer with the core loss with the formula of claim

15, at 1 for 60 Hz, 12 for 1000 Hz, or 70 at 20000 Hz to optimize the magnetic characteristics of the amorphous material.

Claims 28-30 are method of making limitations which are not germane to the patentability of the apparatus.

13. Claims 19-21 and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over '438 and Mischler, in further view of Clark et al.(Clark)(US 4,763,030). '438 and Mischler teaches every aspect of the invention, except the heat treatment, application of a magnetic field, and annealing the segments. Clark teaches amorphous metal being a continuous cooled after annealed in a magnetic field. It would have been obvious to a person skilled in the art at the time of the invention to construct the stator of '438 and Mischler with the segments continuously annealed then cooled in a magnetic field, as in Clark, to improve the magnetomechanical coupling factors of the amorphous metal.

Double Patenting

14. The rejection of Claims 26 and 36 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,462,456 is withdrawn due to the Applicant's terminal disclaimer filed.

Response to Argument

The Applicant's argument that the edge of the strips is not a surface is not persuasive. The drawings of '438 show the edge having dimension along the axis of the core, so it is a surface. The Applicant's argument that the edge is not the "top" or "bottom" surface is not persuasive. The radial inner and outer surfaces of the segment are the top and bottom surfaces of the segment, which is consistent with the plain meaning of the terms because there is nothing above or below those surfaces. The edge surfaces are the top most and the bottom most surfaces of the laminations of the segment. The examiner has included a written description rejection and a drawing objection because the Applicant's argued top/bottom surfaces (the ones with the larger surface area) are NOT shown in the drawings or described in the specification to be perpendicular to the axis of rotation. Particularly, the examiner notes that figure 4b does not show that a line perpendicular to the top surfaces 231 of the teeth being perpendicular (crossing at 90 degrees) to the axis of rotation.

The Applicant's argument that all the segments do not have a surface perpendicular to the axis of rotation is not persuasive. '438 shows all the segments having surfaces with a line normal to the axis of rotation being perpendicular to the axis of rotation, those being the radially inner and outer surfaces of sections 2 and 3. The examiner notes that the claims are over broadly drafted, there is no limitation that the top and bottom surfaces of the pole section 3 and the curved section 2 are both the largest surface area surfaces of strip.

The applicant's argument that the poles of '438 do not include layers with top and bottom surfaces is not persuasive. The poles of '438 are laminated, which is layered and the laminated pole segment, such that each strip in the layered pole includes radially inner and outer surfaces, also know as the top and bottom surfaces.

The Applicant's argument that the edges are not surfaces in the "sense" used in the claims is not persuasive. The edges read literally and directdly on the claimed top and bottom surfaces, so that '438 does meet the "sense" of the claim limitations. The Applicant wishes to claims to include the limitation of the surfaces with the largest surface area being the top and bottom surfaces, but that limitation is NOT in the claims. The examiner notes with the objection to the drawings and the rejection of the claims under 112 first paragraph, that the limitation is not even in the specification.

The examiner agrees that '438 includes a surface which is parallel to the axis of rotation, but the surface has not been set forth in the claims. The Applicant's argument that '438 teaches away from the Applicant's invention is not persuasive because '438 reads on the structure of the claims, except for the material being amorphous. The examiner again notes that the applicant's teeth 230 do not have the top and bottom surface with a normal line perpenidular (crossing the rotor axis at 90 degrees) to the axis of rotation.

The Applicant's argument that Mischler does not teach the flux traversing an air gap is not persuasive. The Applicant is viewing the reference individually instead of the combined teachings of Mishler and '438. The Applicant's argument that Mischler does not suggest the claimed subject matter is not persuasive because Mischler col. 1, line

15 teaches that amorphous metal is low cost with low magnetic losses, which motivates the use of the metal in the motor or generator of '438. The Applicant's arguments regarding the operation of Mischler is not persuasive because Mischler is only relied upon for the inexpensive amorphous material used in motors. The Applicant's argument regarding the backiron and teeth are not persuasive because the limitations are shown in '438.

The Applicant's argument that hindsight is the only way to come up with the combination of the claimed invention is not persuasive. The motivation to combine '438 and Mischler is literally set forth in Mischler, col. 1, line 15 that amorphous metal is low cost with low magnetic losses.

The Applicant's argument that the flux does not jump an air gap is not persuasive because '438 teaches the gap between the sections 2 and 3.

The Applicant's arguments regarding heat treatment and annealing is not persuasive because they are method of making which are not germane to the patentability of the apparatus AND because the limitations are taught by Clark et al..

The Applicant's arguments that the dependent claims are allowable because the independent claim is allowable is not persuasive because the independent claims are properly rejected as discussed above.

Conclusion

15. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl I.E. Tamai at (703) 305-7066.

The examiner can be normally contacted on Monday through Friday from 8:00 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Nestor Ramirez, can be reached at (703) 308-1371. The facsimile number for the Group is (703) 305-3432.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

Karl I Tamai
PRIMARY PATENT EXAMINER
October 6, 2003

KARL TAMAI
PRIMARY EXAMINER